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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,766	02/06/2004	Mark Weselak	36-001310US	5577

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EXAMINER

HYUN, PAUL SANG HWA

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 08/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/773,766

Applicant(s)

WESELAK ET AL.

Examiner

Paul S. Hyun

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-68 is/are pending in the application.
- 4a) Of the above claim(s) 49-68 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 05/23/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

REMARKS

In response to a written restriction requirement mailed on 04/18/06, Applicants elected the prosecution of claims 1-48 without traverse. Consequently, claims 49-68 are withdrawn from further consideration by the Examiner.

Claim Objections

Claim 37 is objected to because of the following informalities:

The limitation "scaning" recited in line 3 of the claim is misspelled.

Appropriate corrections are required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **1, 5, 9, 23, 35, 36, 38, 39, 41 and 46-48** are rejected under 35 U.S.C. 103(a) as being unpatentable over Vago (US 5,921,102) in view of Felder et al. (US 6,467,285 B2).

Vago discloses an automated, cryogenic storage and retrieval system. The system comprises an antechamber 26 leading to a storage module 24 via a lockable door 44 (see line 59, col. 5), giving access to a storage unit 20a, the storage unit comprising racks with a plurality of slots for accommodating sample vials. The module 24 can be accessed via door 44 only after abort control 42 has been activated. The

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system further comprises a work area 28 that provides the operator access to the storage module 24, and a computer system 30 that controls a robotic insertion and retrieval apparatus 158 that transfers vials between the storage module 24 and the work area 28 (see Fig. 1). Vial transfer can be programmed to repeat or customized instructions can be manually input by the operator of the system using an interface in the form of keyboard 32 and monitor 31 (see lines 3-4, col. 6). The system utilizes a bar code system to identify the vials to store and retrieve. The computer 30 comprises an internal database that communicates with a bar code reader to verify the identities of the vials to be stored and retrieved (see line 63, col. 5 - line 12, col. 6). For cryogenic storage of blood cells, the temperature of the storage unit can be lowered to -95 degrees Celsius (see lines 35-40, col. 9).

The claimed invention differs from the system disclosed by the Vago reference in that the racks disclosed by Vago are adapted to accommodate vials, not trays. Felder et al. disclose an automated storage and retrieval apparatus wherein the apparatus is adapted to store and retrieve containers 3 stored in racks 23, wherein the containers can be microplates (see Abstract). It would have been obvious to one of ordinary skill in the art to provide a rack capable of accommodating trays to the apparatus disclosed by Vago so that it can store microplates and other array-based containers.

Claims **1, 7, 8, 10, 12-23, 26-29, 31, 35-39, 41-44 and 48** are rejected under 35 U.S.C. 103(a) as being unpatentable over Felder et al.

Felder et al. disclose an automated, cryogenic storage and retrieval system

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comprising a storage module 1 having an exterior door 62 and an interior door 61 that gives access to a plurality of racks 23 having trays 28 arranged in rows and columns adapted to secure tray-like containers, such as microplates (see Fig. 8 and line 44, col. 2) in between raised guides 38 of trays 28 (see line 38, col. 9), wherein each container is assigned a bar code (see Abstract) that is read by a bar code reader 65. The system also comprises a work area where the operator can communicate with the system via an interface 82 to control a robotic transfer mechanism that is adapted to store and retrieve the containers. The interface 82 utilizes a computer system 1300 (see Fig. 13) that comprises main memory 1308, a RAM and secondary memory 1310 for storing data (see lines 25-35, col. 11). When retrieving a container, the operator utilizes the interface to input the container identification, at which point a central processor 81 indicates the location of the container of interest to a control system 80 from a database that stores all the relevant information regarding the container, and mechanically retrieves the container (see lines 12-57, col. 8). The system is capable of storing containers at a temperature of -50 degrees Celsius (see lines 54-57, col. 2).

Although the reference does not disclose that the doors are lockable, the reference discloses that the storage module is a cryogenic chamber as well as a dehumidifier and that the system comprises two doors in order to minimize interaction between the exterior and the interior of the module (see lines 54-67, col. 5). In light of the disclosure, it would have been obvious to one of ordinary skill in the art to make the doors lockable in order to ensure that the interior of the system does not interact with the exterior of the system.

The reference also does not disclose slots arranged in an array having 50 rows or a plurality of nests in each slot. However, the reference does disclose that the system is capable of accommodating 1,000 microplates (see line 52, col. 2) and that each slot can comprise any shape or configuration (see line 15, col. 7). It would have been obvious to one of ordinary skill in the art to provide 50 or more rows of slots so that it can accommodate more containers. It also would have been obvious to provide more than one nest to each slot so that a plurality of microplates can be stored in each slot.

Although the reference does not disclose a bar code label for each rack 23, it would have been obvious to one of ordinary skill in the art to provide a plurality of identical bar codes to two or more sides of each rack, wherein the bar code assigned to each rack corresponds to the bar code assigned to the container stored in the rack. This would provide a means to verify the identity of the container to be retrieved prior to actually displacing the container from the rack.

Although the reference does not disclose the use of alphanumeric labels or color coded labels for labeling the location of the containers, the reference discloses the use of bar codes. It is well-known in the art that alphanumeric labels and color coded labels are obvious variations of means for identifying and cataloguing objects. It would have been obvious to one of ordinary skill in the art to provide a visual means for identifying the containers (i.e. color coded labels or alphanumeric labels) instead of bar codes so that the operator can easily identify the general location of the container of interest.

Although the reference does not disclose the contents of the microtiter plates that the system is adapted to accommodate, the reference discloses that it is well-known

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that certain biological samples (i.e. DNA and proteins) must be preserved in cryogenic conditions (see lines 34-50, col. 1). Moreover, it is also well-known in the art that microtiter plates are used to store DNA, proteins, enzymes, cells, etc. It would have been obvious to one of ordinary skill in the art to store nucleic acids and proteins as well as other cryogenically stored biological samples in a microtiter plate and store the microtiter plate inside the system disclosed by the reference.

Although the reference does not disclose that the database comprises the data recited in claims 42 and 43, it would have been obvious to one of ordinary skill in the art to include all the pertinent information regarding the contents of the container in the bar codes. Information like the library name, a sub-group description, container designation, container type, container creation date, container location, identity of the contents of the container, and the volume of the contents of the container, container history, container activity date, a volume removed per sample, and a volume remaining per sample are information that would have been obvious to one of ordinary skill in the art to store in the bar codes.

Claims **2 and 3** are rejected under 35 U.S.C. 103(a) as being unpatentable over Felder et al. in view of Klee (US 4,800,728).

Felder et al. do not disclose relative humidity of the work area. However, Klee discloses that frost forms whenever ambient air exceeding relative humidity of 50% at room temperature mixes with cryogenic air (see lines 59-64, col. 2).

In light of the disclosure, it would have been obvious to one of ordinary skill in the

art to maintain the temperature of the work area between 1-8 degrees Celsius and the relative humidity below 40% in order to prevent the formation of frost whenever the door of the cryogenic storage system disclosed by Felder et al. is opened.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vago in view of Felder et al. as applied to claim 1, and further in view of Klee.

Neither Vago nor Felder et al. disclose relative humidity. Klee discloses that frost forms whenever ambient air exceeding relative humidity of 50% at room temperature mixes with cryogenic air (see lines 59-64, col. 2).

In light of the disclosure, it would have been obvious to one of ordinary skill in the art to maintain the temperature of the antechamber between 4-20 degrees Celsius and the relative humidity low in order to prevent the formation of frost whenever the door of the modified cryogenic storage system disclosed by Vago/Felder et al. is opened.

Claims 24, 25, 30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Felder et al. in view of Kasman (US 5,459,300). Felder et al. does not disclose the dimensions or the material of the microtiter plate.

Kasman discloses a microtiter plate made out of polycarbonate (see line 41, col. 4). The microplate further comprises covers 18a and 21 for sealing the wells of the microplate wherein cover 18a comprises a handle (see Fig. 2A). The reference also discloses that microplates having 96 or 384 wells are standard (see line 27, col. 1).

Given the teachings of Kasman, it would have been obvious to one of ordinary

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skill in the art store the microplate disclosed by Kasman in the storage module disclosed by Felder et al. since polycarbonate is thermally stable (see line 40, col. 4 of Kasman reference).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vago in view of Felder et al. as applied to claim 5, and further in view of Roth et al. (US 5,758,913).

Neither Vago nor Felder et al. disclose that the locks comprise a magnetic locking means.

Roth et al. disclose that electronic door locks having holding forces ranging between 500-2,000 pounds are well-known in the art (see line 18, col. 1). In light of the teachings of Roth et al. it would have been obvious to one of ordinary skill in the art to provide a magnetic lock having a holding force greater than 100 pounds to the door of the modified system disclosed by Vago and Felder et al. in order to ensure the security of the storage units.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Felder et al. in view of Rivoire (US 4,314,459). Felder et al. do not disclose a means for precisely controlling the temperature of the system within 2 degrees Celsius of the desired temperature setting.

Rivoire discloses a cryogenic device comprising temperature sensor 17 in communication with control circuit 18 that regulates a valve 15 for controlling the

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temperature. The reference discloses that the device is capable of maintaining a precision of 0.1 degree Celsius between the temperature of 0 and -180 degrees Celsius (see line 10, col. 5- line 40, col. 6).

In light of the teachings of Rivoire, it would have been obvious to one of ordinary skill in the art to provide the system disclosed by Felder et al. with a means for monitoring and regulating the temperature of the storage unit within 0.1 degree Celsius in order to store the contents of the containers at the optimal temperature.

Claim **40** is rejected under 35 U.S.C. 103(a) as being unpatentable over Vago in view of Felder et al. as applied to claim 35, and further in view of de Langavant et al. (US 5,660,046).

Neither Vago nor Felder et al. disclose that the desired temperature of the storage module can be input via the computer.

de Langavant et al. disclose a cryogenic temperature control system wherein the desired temperature of the cooling system can be input via a keyboard that is in communication with an electronic controller (see claim 14) .

In light of the teachings of de Langavant et al. it would have been obvious to one of ordinary skill in the art to provide the modified system disclosed by Vago and Felder et al. with a means to input the desired temperature of the cryogenic system so that the temperature of the system can be adjusted conveniently.

Claim **45** is rejected under 35 U.S.C. 103(a) as being unpatentable over Vago in

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view of Felder et al. as applied to claim 35, and further in view of Schmitz II, et al. (US 4,979,338).

Neither Vago nor Felder et al. disclose that the temperature of the storage module is displayed by a data output device.

Schmitz II et al. disclose a cryogenic storage system 18 comprising a digital temperature controller with a temperature display that displays the temperature inside of the storage system (see line 56, col. 5).

In light of the teachings of Schmitz II et al. it would have been obvious to one of ordinary skill in the art to provide the modified system disclosed by Vago and Felder et al. with an output means that displays the temperature of the cryogenic system so that the temperature of the system can be monitored.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul S. Hyun whose telephone number is (571)-272-8559. The examiner can normally be reached on Monday-Friday 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PSH
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